

Lateral-Directional Active Flow Control on a Hybrid ICE-101/Saccon UCAV

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CFD description

CFD code

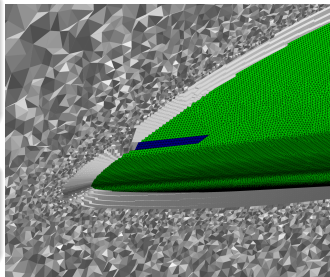
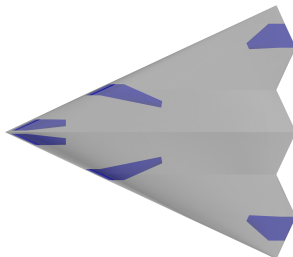
- HPCMP CREATE-AVTM / *Kestrel*
- Cell-centered finite volume
- Compressible Navier-Stokes equations
- 2nd-order in space and time
- SARC turbulence model

Grid

- Geometry with 6 forcing slots
- 71M cells
- $y^+ < 1$

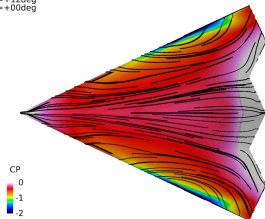
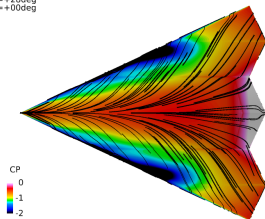
Forcing

- Source boundary condition
- $c_\mu = 0.005$

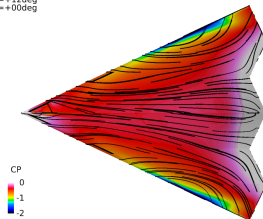
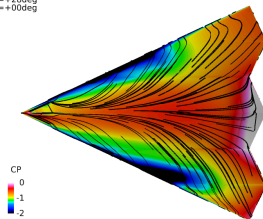


Comparison Unforced - Apex Forcing

Unforced

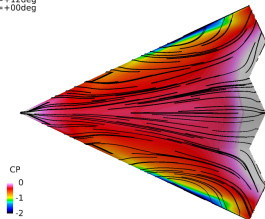
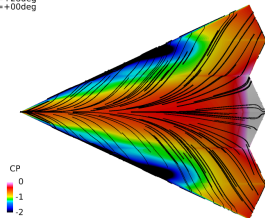
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 $\beta = +00\text{deg}$  $\alpha = +28\text{deg}$
 $\beta = +00\text{deg}$ 

Apex Forcing

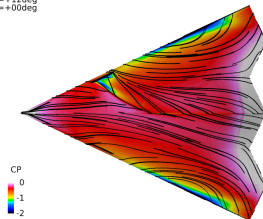
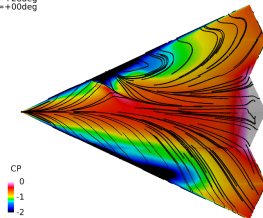
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Comparison Unforced - Midspan Forcing

Unforced

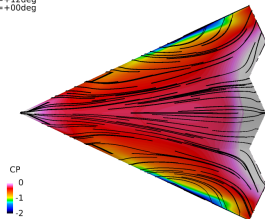
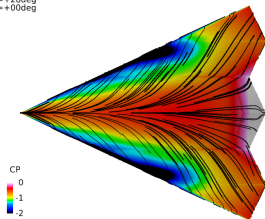
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Midspan Forcing

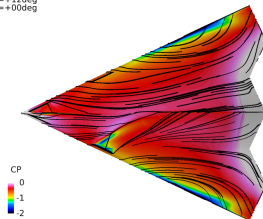
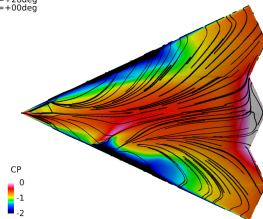
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 $\beta = +00\text{deg}$ 

Comparison Unforced - Combined Forcing

Unforced

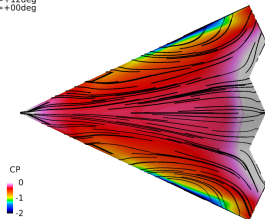
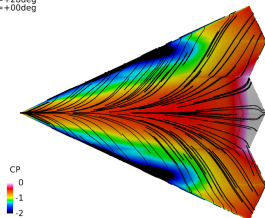
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Combined Forcing

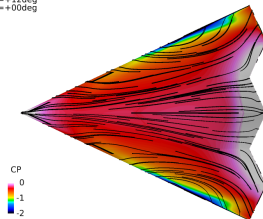
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 $\beta = +00\text{deg}$ 

Comparison Unforced - Trailing Edge Forcing

Unforced

 $\alpha = +12\text{deg}$
 $\beta = +00\text{deg}$  $\alpha = +28\text{deg}$
 $\beta = +00\text{deg}$ 

TE Forcing

 $\alpha = +12\text{deg}$
 $\beta = +00\text{deg}$  $\alpha = +28\text{deg}$
 $\beta = +00\text{deg}$ 